100

103

105

107

110

Computer — 140

Memory

I/O Unit — 130

Storage — 150

Operating System — 152

CPU — 120

Application Program — 154

Database — 156

Communication Card — 160

175

Network — 170

Fig. 1

200

Upper Data Field		Lower Data Field		Status		Parity	
31	16	15	6	5	3	2	0

240   230   220   210

Fig. 2

300

DATA_WORD_RANGE	31:0
UPPER_DATA_RANGE	31:16
LOWER_DATA_RANGE	15:6
STATUS_RANGE	5:3
PARITY_RANGE	2:0
DATA_WORD_WIDTH	32
UPPER_DATA_WIDTH	16
LOWER_DATA_WIDTH	10
STATUS_WIDTH	3
PARITY_WIDTH	3

Fig. 3

400

```
reg [DATA_WORD_WIDTH –1:0] data_word;
reg [UPPER_DATA_WIDTH –1:0] upper_data_field;
reg [LOWER_DATA_WIDTH –1:0]  lower_data_field;
reg [STATUS_WIDTH –1 :0]   status;
reg [PARITY_WIDTH - 1:0]   parity;
upper_data_field[UPPER_DATA_WIDTH –1:0] = data_word[UPPER_DATA_RANGE];
lower_data_field[LOWER_DATA_WIDTH –1:0] = data_word[LOWER_DATA_RANGE];
status[STATUS_WIDTH –1 :0] = data_word[STATUS_RANGE];
parity[PARITY_WIDTH –1 :0] = data_word[PARITY_RANGE];
```

Fig. 4A

450

```
reg [31:0] data_word;
reg [15:0] upper_data_field;
reg [9:0]  lower_data_field;
reg [2:0]  status;
reg [2:0]  parity;
upper_data_field[15:0] = data_word[31:16];
lower_data_field[9:0] = data_word[15:6];
status[2:0] = data_word[5:2];
parity[2:0] = data_word[2:0];
```
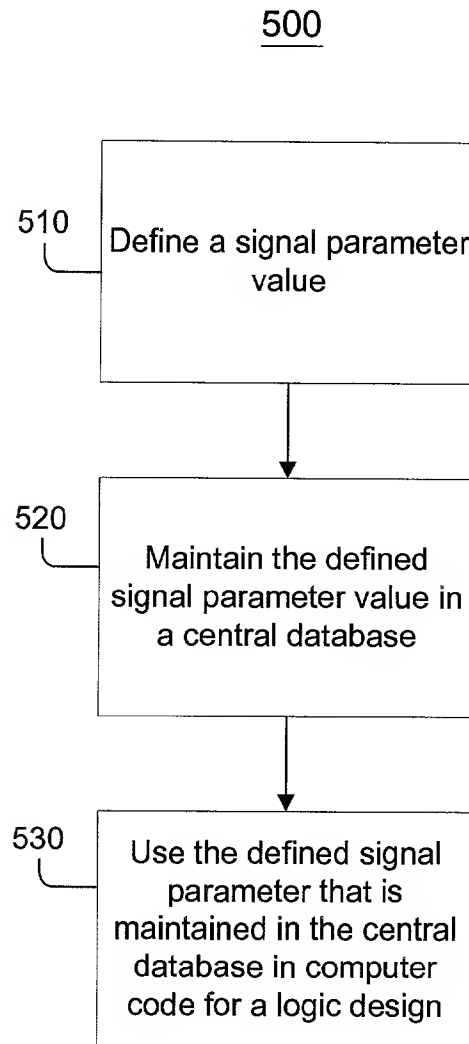
Fig. 4B

<u>500</u>

510 | Define a signal parameter value

520 | Maintain the defined signal parameter value in a central database

530 | Use the defined signal parameter that is maintained in the central database in computer code for a logic design

Fig. 5